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Recycled Iron Used to Neutralize Solvents in Groundwater Beneath SRS

AIKEN, S.C., August 19, 2019 – Savannah River Nuclear Solutions (SRNS) is implementing an innovative remediation technology by using 760 tons of iron filings recycled from the automotive industry to treat groundwater contaminated by solvents in a section of an aquifer beneath the Savannah River Site (SRS).

The filings, which are ground-up iron parts from automotive engines, will be mixed with a food-grade, starch-like material and injected into 22 wells, each 12 feet apart. The high-pressure injection creates fractures in the subsurface rock, creating space to be filled by the mixture. Upon completion, a four-inch-thick, water-permeable wall consisting of iron filings will extend to its deepest point approximately 135 feet below the earth's surface.

Groundwater will flow through the 264-foot-long, 23,000-square-foot metal wall, which neutralizes the solvents.

"The contaminated water cascades down through the filings, significantly increasing the amount of contact with the iron. The interaction with the iron breaks down the structure of the contaminants, becoming harmless," said Philip Prater, senior



Savannah River Nuclear Solutions is managing the creation of a 264-foot-long metal wall located 135 feet below the earth's surface that will allow groundwater to flow through it and in the process destroy harmful solvents.

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physical scientist Department of Energy-Savannah River. “And this system is designed to work for decades with little maintenance, as it has in other parts of the country.”

According to Prater, the remedial technology SRS prime contractor SRNS is deploying is innovative because it does not involve use of a trench, and it can be installed at greater depths than permeable reactive barriers built at the site in the past. This technology also allows for precision placement, enabling SRS to intercept the contaminated groundwater plume in a narrow zone as it travels along an old, subsurface stream bed channel.

“This is the first time we have experimented with this approach using a subsurface wall to capture and neutralize solvents,” said Mark Amidon, a scientist at the Savannah River National Laboratory. “We are confident that our goals will be fully achieved related to this remarkably cost-effective project at the Savannah River Site’s P Area.”

From 1954 to 1984, the site’s P Reactor produced tritium and plutonium in support of the nation’s Cold War nuclear deterrent. Solvents used at that reactor and waste sites across SRS seeped into the subsurface over time.

“This highly efficient environmental cleanup technology is another asset within the arsenal of environmental restoration tools assembled for use across SRS,” said Seth Miller, the SRNS project manager for the groundwater cleanup.

The water-permeable wall is scheduled for completion in November this year.

Savannah River Nuclear Solutions, a Fluor-led company with Newport News Nuclear and Honeywell, is responsible for the management and operations of the Department of Energy’s Savannah River Site, including the Savannah River National Laboratory, located near Aiken, South Carolina.

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